

## GRIP Tropical Forecast Discussion for September 24, 2010

Created 1600 UTC September 24, 2010

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**Summary:** Shortly after yesterday's weather briefing, AL95 became TD5, and later in the afternoon, Tropical Storm Matthew. The Global Hawk is completing a 26 hour mission into Matthew. A deep convective burst overnight was displaced from the low-level center due to 15 kt easterly shear, so Matthew is still somewhat disorganized as of this discussion, and has not intensified. Landfall is expected in the next 24 hours, with subsequent weakening. The future of Matthew is still questionable; in the 5-6 timeframe many of the global models hint at development east of the Yucatan, rather than the Gulf. Elsewhere, Lisa has once again intensified to a tropical storm and the remnants of Julia still remain very unlikely to re-develop.

### Forecast for 1600 UTC 9/24/10:

#### Synoptic Overview:

Today's synoptic conditions have not changed much from yesterday. The dominant feature in the western Atlantic continues to be the ridge of high pressure centered just to the west of Bermuda (**S1**). This feature can also clearly be seen as the dominant steering pattern with a center more over the mid-Atlantic states of the US (**S2**). This steering flow is assisting in the continued westward propagation of PGI46 (now Tropical Storm Matthew). The CIMSS wind shear analysis (**S3**) shows that shear values are somewhat high across most of the southern and eastern portions of the Caribbean Sea, which are also having impacts on Tropical Storm Matthew. However, the shear values in the northwestern Caribbean are much lower and could provide a better environment for some strengthening of the system. Water vapor imagery (**S4**) along with the CIMSS Saharan Air Layer analysis (**S5**) confirms that the dry air associated with the ridge extends across the central Atlantic and far south into the Atlantic branch of the ITCZ, and it continues to keep conditions unfavorable for tropical development for much of the central Atlantic despite wind shear values being low and SSTs being high. In the eastern Atlantic, the eastern side of the ridge is dominating with an area of low pressure that can be attributed as the remnants of Hurricane Julia embedded within the flow (**S2**). To the north of Tropical Storm Lisa is an upper level low that continues to conflict with the eastern branch of the ridge and inhibit Lisa's motion. Wind shear analysis (**S3**) also shows large shear values on the northern side of Lisa.

The forecast models are in good agreement that the large ridge in place over the western and central Atlantic will begin to move to the east, which should help steer Tropical Storm Matthew to the north, eventually. In the eastern Atlantic, the upper level low currently in place will also move off to the northeast and pull Tropical Storm Lisa slowly along with it. If Lisa persists and the ridge builds in over the eastern Atlantic, the steering should eventually influence Lisa and potentially steer the storm back to the west. However, SSTs and wind shear could play a large role in determining what will remain of

Lisa. None of the models appear to pick up on the remnants of Hurricane Julia in the central Atlantic, and it is unknown what sort of impact those remnants may also have on Lisa.

#### **Tropical Storm Matthew (PGI46):**

Tropical Storm Matthew (AL95/PGI46) at 5am EDT was located at 79.8W/14.3N. Maximum sustained winds are estimated at 45 kt, minimum sea level pressure, 1000 hPa, and movement west at 14 kt. IR satellite imagery indicates a large convective burst, seemingly near the center, overnight (1). However, indications point to that convection being displaced west of the center due to 15 kt deep layer shear (2). The culprit for the wind shear and the main westward steering flow for the storm is the anticyclone centered over water east of the Yucatan (2). The 0900UTC vorticity center was located near 80W/14.5N.

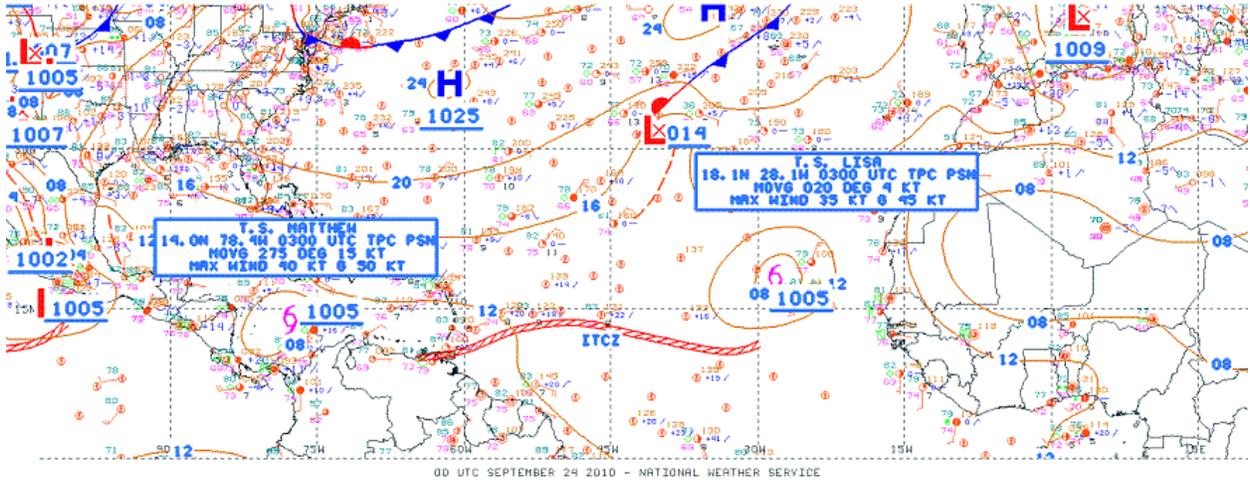
The model guidance consensus track is for the storm to make landfall today and subsequently weaken (3, 4). While the consensus is close for the first couple of days, the 3-5 day period is still quite different among models. Some take it northwestward with a long residence time over land, while many (including the GFS, NOGAPS and ECMWF) show a large, weak low over the land over the weekend, which eventually spins up off the coast of the Yucatan in 5-6 days (5). Right now, it appears that the attention must be focused in this region for future development rather than the Gulf. Overall, while the storm may maintain tropical storm strength, a hurricane is not expected before landfall, and Matthew will weaken over land this weekend. Here is the consensus track forecast:

25/0600UTC: 85W/15.5N; 26/0600UTC: 88W/16.5N; 27/0600UTC: 89.5W/17.5N; 28/0600UTC: 89.5W/18.0N; 29/0600UTC: 89.5W/19.0N

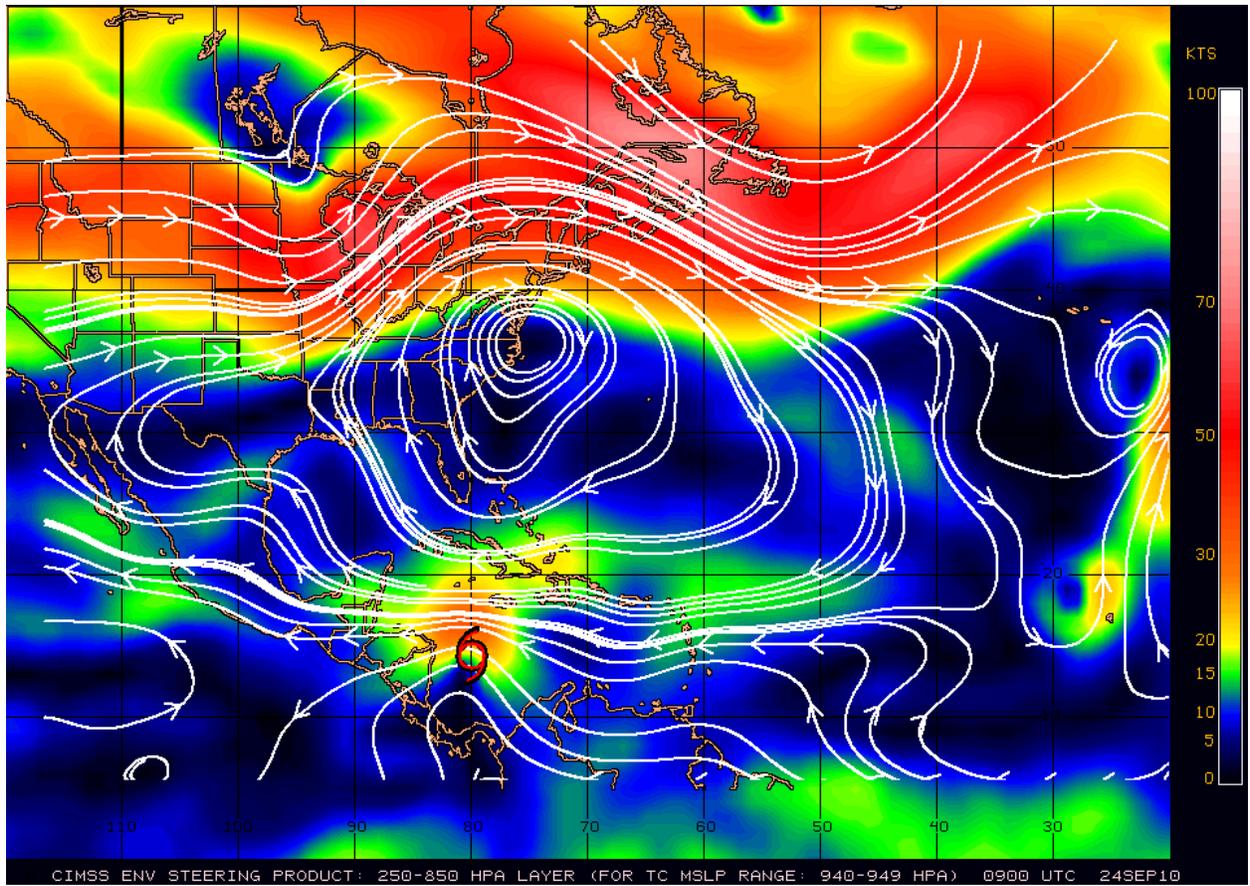
#### **Tropical Storm Lisa:**

Tropical Storm Lisa has once again climbed out of tropical depression status near 18.4° N and 27.7° W, with maximum sustained winds of 35 kt and a minimum central pressure of 1004 mb as of 0900UTC. The storm has been drifting northeastward at about 4 kt. Though convection near the center has increased, it is confined to the western half of the storm (L1). Lisa is not expected to strengthen beyond 40 kt over the forecast period, with this peak occurring within 48 hours (L2). After that point the storm will begin a slow weakening trend, and the 0900 UTC NHC forecast calls for Lisa becoming a remnant low by 0600UTC on the 27th. Model track guidance is still fairly clustered in a north-northwest direction with a few outliers (L3), and the NHC forecast follows that trend. The 0600UTC GFS run moves Lisa north-northwestward, with a turn beginning around 36 hours that then brings the storm toward the northeast as it weakens; a somewhat persistent remnant low of Lisa remains in the model through 120 hours. The 0000UTC ECMWF solution keeps Lisa on a north-northwestward track and dissipates the storm by 96 hours.

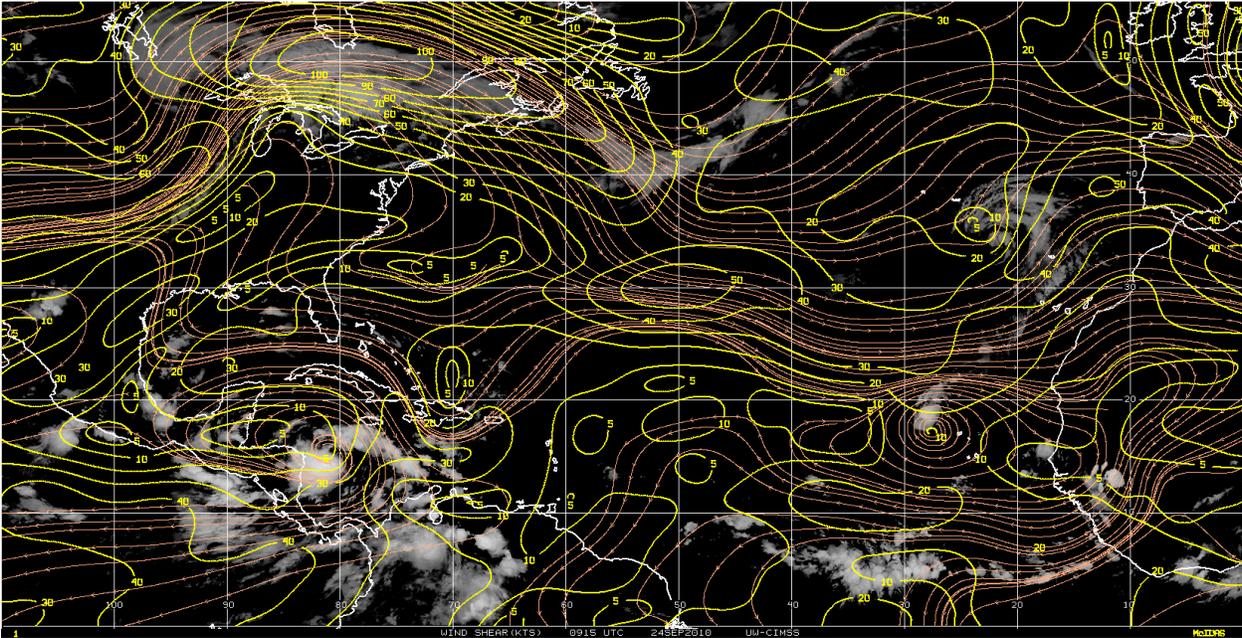
(S1) OPC Surface Analysis



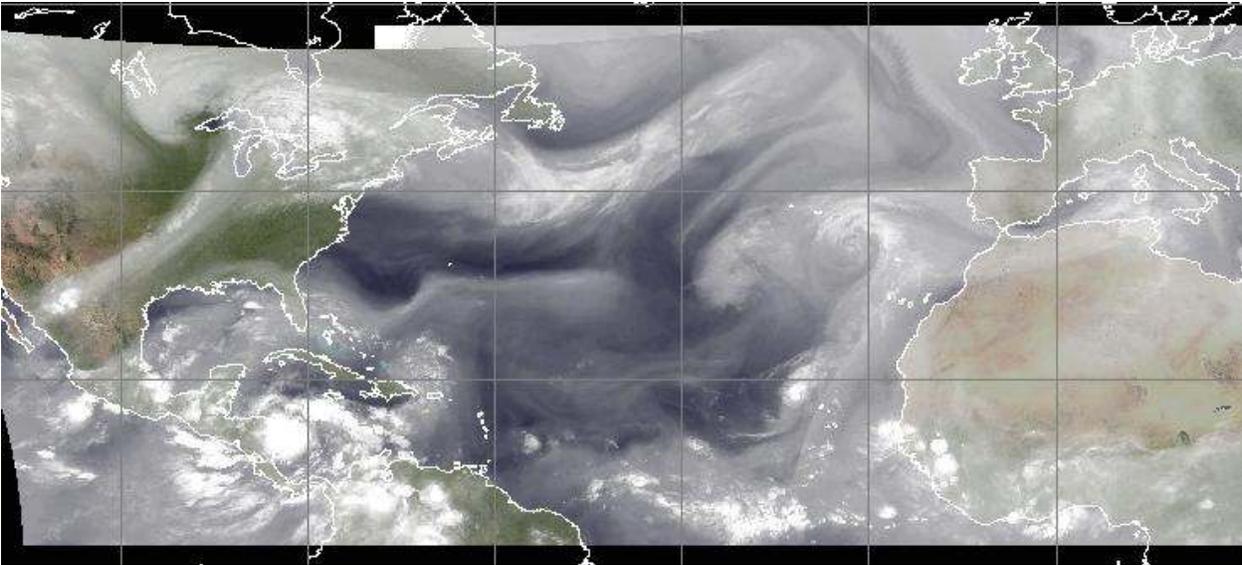
(S2) CIMSS Deep Layer Mean 850-250 hPa Steering Analysis



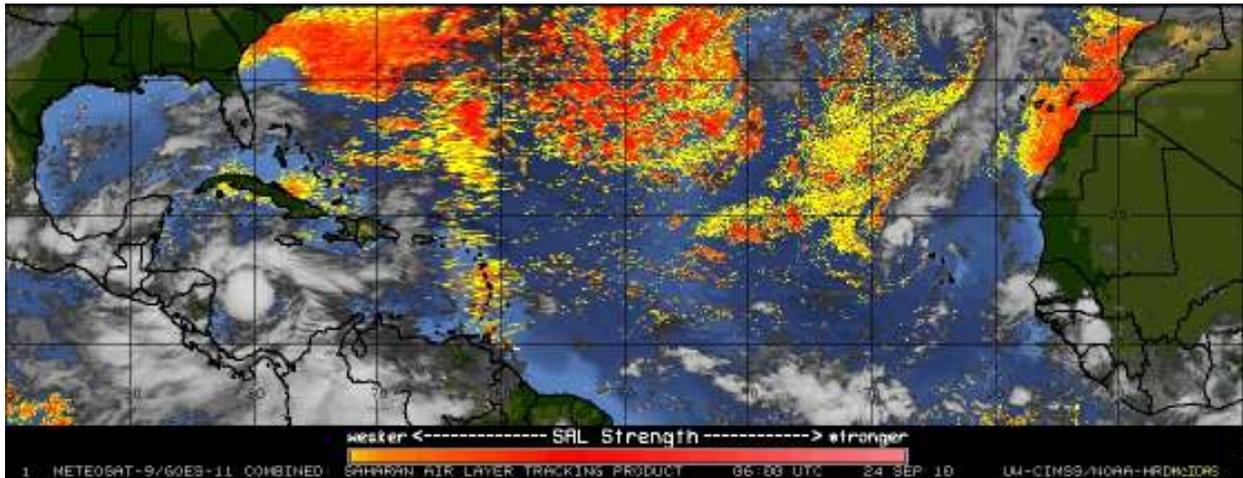
**(S3) CIMSS Wind Shear Analysis**



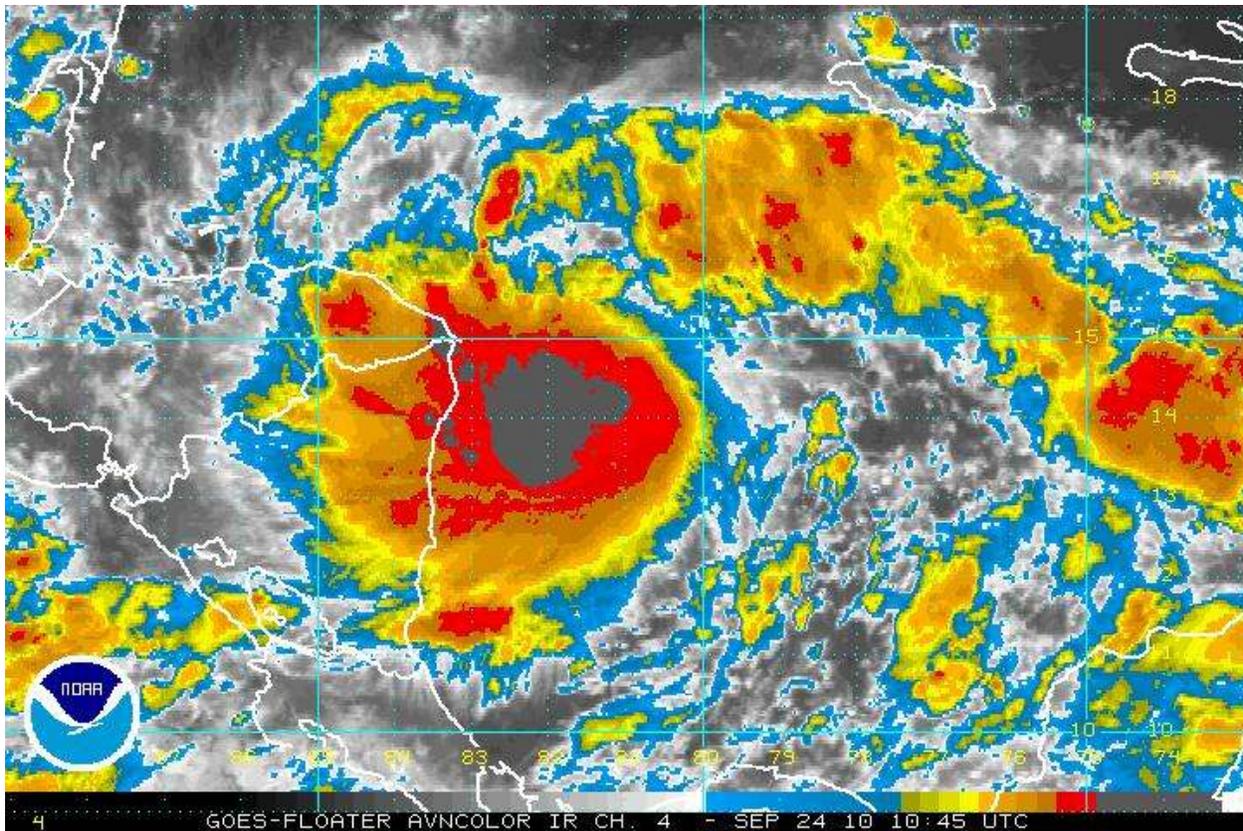
**(S4) Water Vapor Imagery for September 24, 2010**



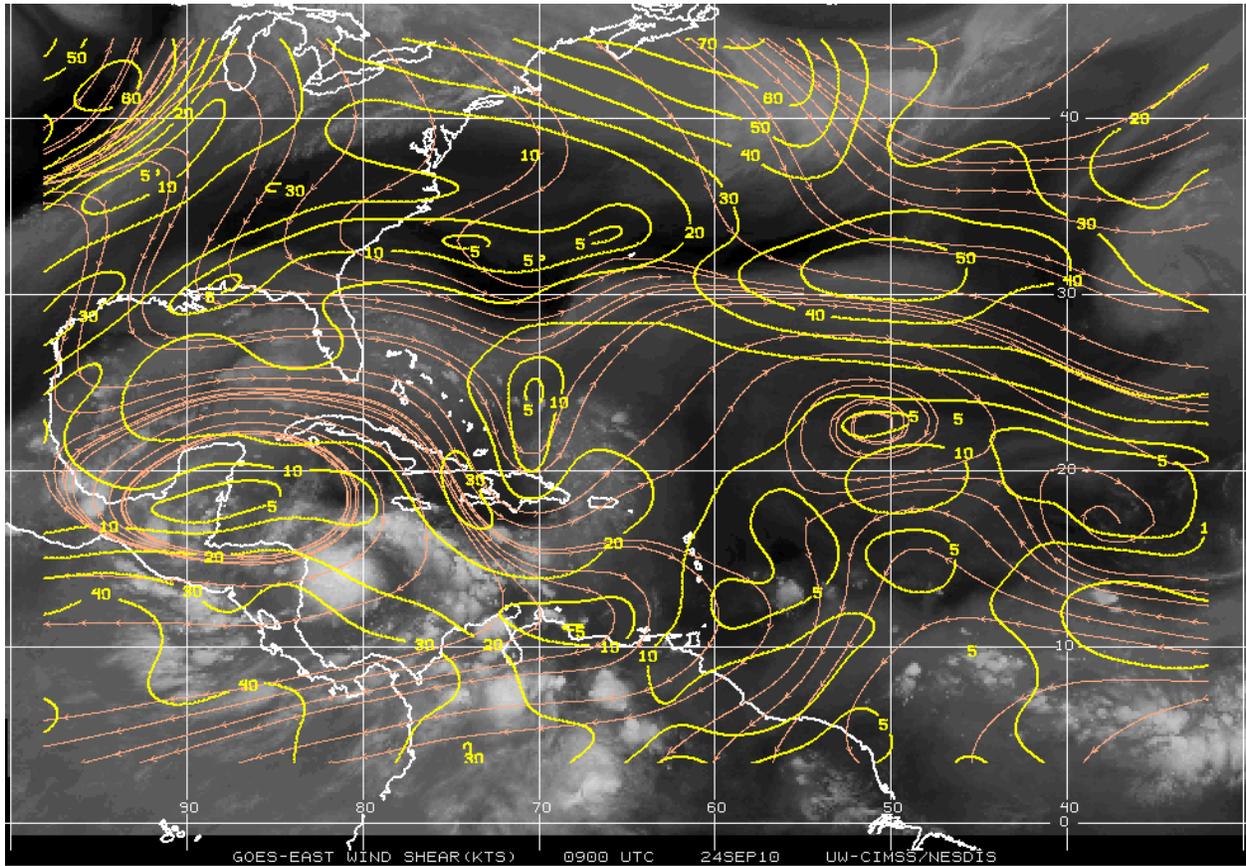
(S5) CIMSS Saharan Air Layer Analysis



(1) IR satellite image of Matthew at 1045UTC, 24 September

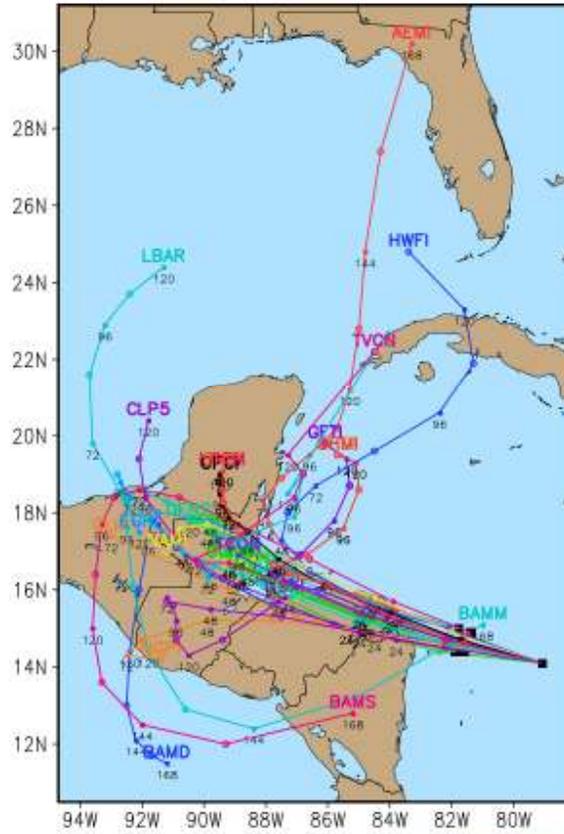


(2) CIMSS deep layer vertical wind shear 0900UTC, 24 September



(3) Model guidance forecasts for Tropical Storm Matthew at 0600UTC, 24 September

Atlantic TROPICAL STORM MATTHEW Model Tracks  
Valid Time: 0600 UTC 24 September 2010



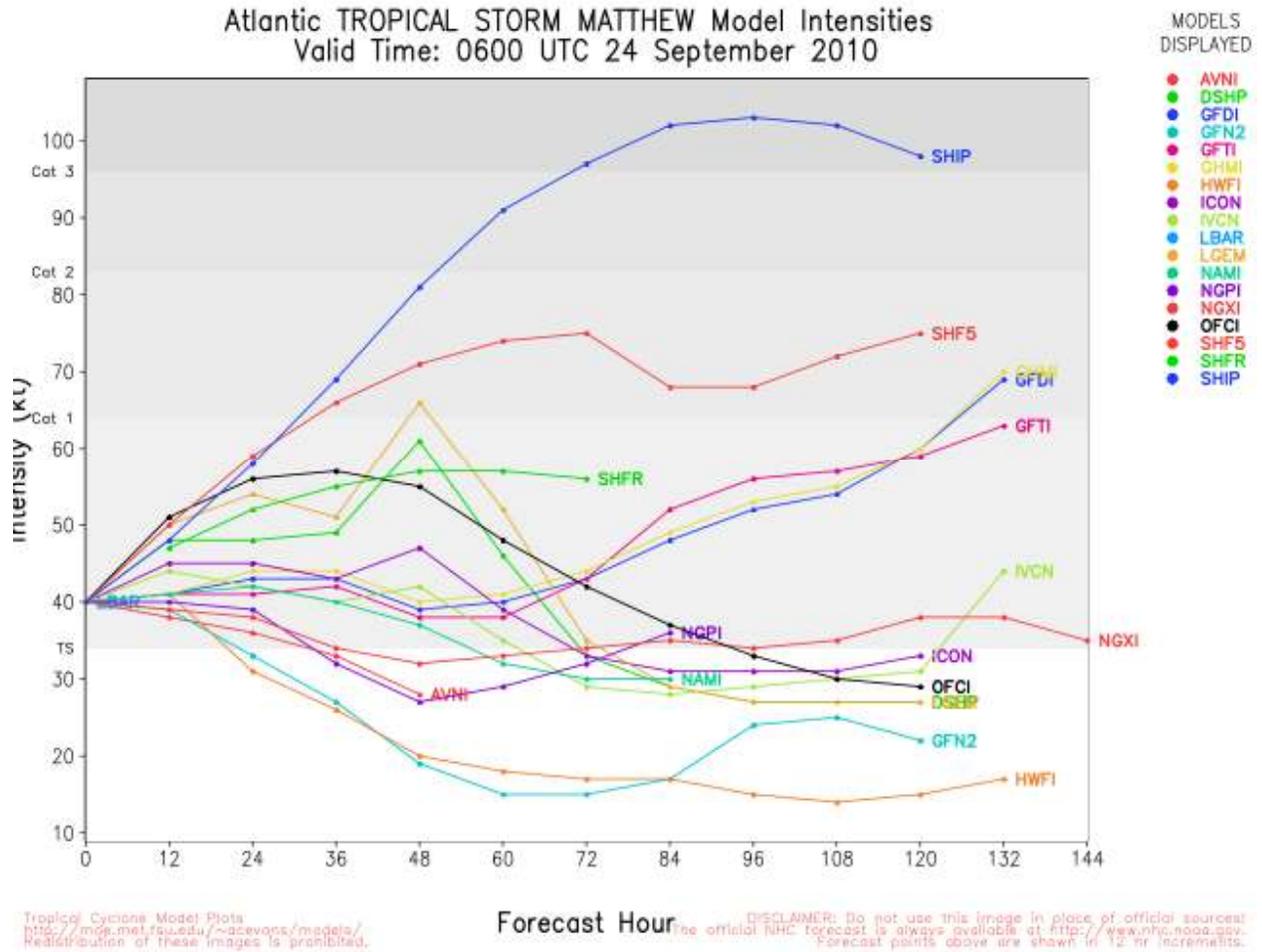
MODELS  
DISPLAYED

- AEMI
- AVNI
- BAMD
- BAMB
- BAMS
- CCUN
- CLIP
- CLP5
- DSHP
- EGRI
- GFDL
- GFN2
- GFTI
- GHM
- GUNA
- HWFI
- LBAR
- LGEM
- NAMI
- NGPI
- NGXI
- OFCI
- SHIP
- TCCN
- TCON
- TVCC
- TVCN

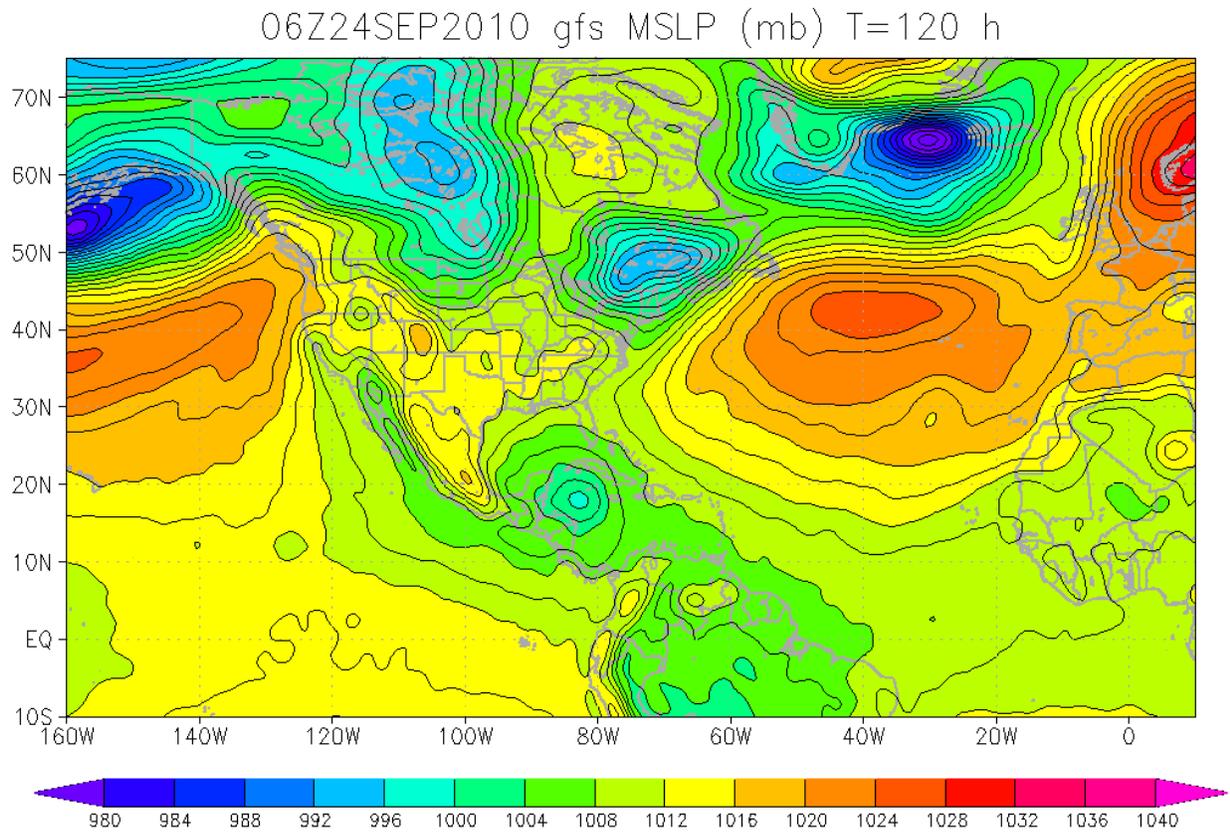
Tropical Cyclone Model Plots  
<http://mof.met.fcu.edu/~acevoys/models/>  
Redistribution of these images is prohibited.

DISCLAIMER: Do not use this image in place of official sources!  
The official NHC forecast is always available at <http://www.nhc.noaa.gov>.  
Forecast points above are shown in 12-hr increments. Initial points denoted by black squares.

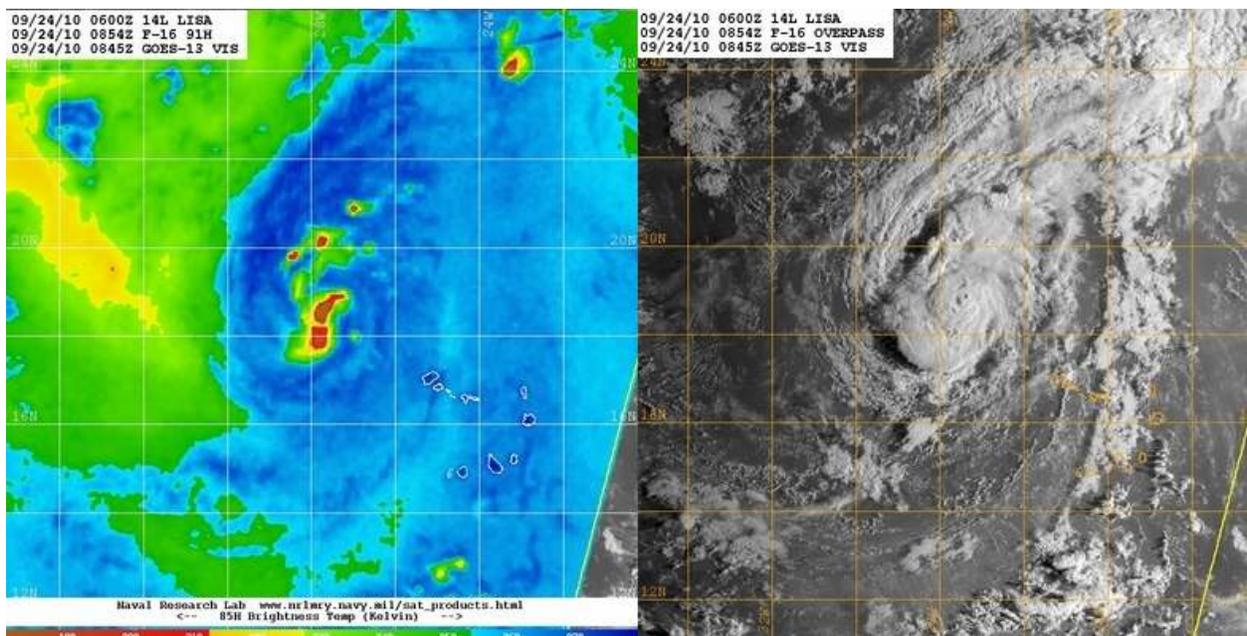
(4) Model guidance intensity forecast for Matthew from 0600UTC, 24 September



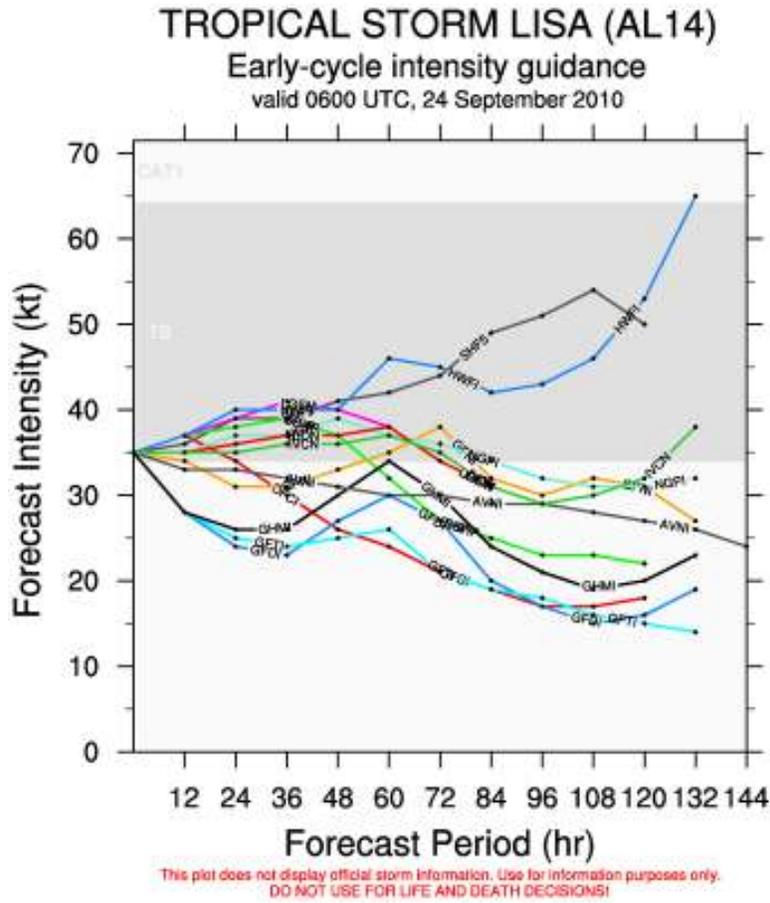
**(5) GFS forecast for 120 hours (0600 UTC, 29 September), initialized 0600UTC, 24 September**



**(L1) Visible and SSMIS microwave imagery of Lisa at 0845UTC, 24 September**



(L2) Model guidance intensity forecasts for Lisa at 0600UTC, 24 September



(L3) Model guidance forecasts for Lisa at 0600UTC, 24 September

